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[54] **CARPET SHEARING APPARATUS**

[76] Inventors: **John B. Weathers,** 544 Dawnville Rd., NE., Dalton, Ga. 30720; **Paul B. Mitchell, Jr.,** 2003 Ravenwood Dr., Collinsville, Ill. 62234; **Coy L. Sampson,** 800 S. Hamilton St., Dalton, Ga. 30720; **Charles B. Hubbs,** P.O. Box 1886, Dalton, Ga. 30722

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[51] **Int. Cl.**[4] **D06C 13/00**
[52] **U.S. Cl.** ..... **26/15 R**
[58] **Field of Search** ..... 26/15 R, 15 L, 15, 16, 26/18

[56] **References Cited**

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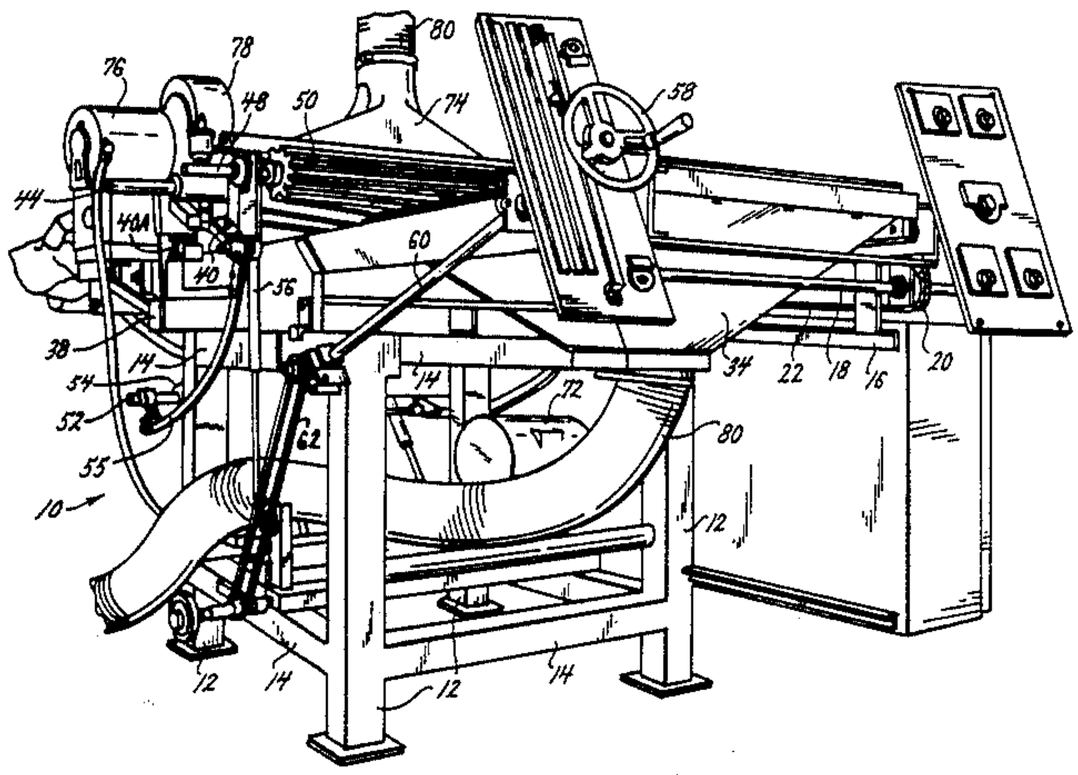
Primary Examiner—Werner H. Schroeder
Assistant Examiner—Jodi A. Tokar

[57] **ABSTRACT**

A carpet shearing machine for modular carpet which includes a moveable table which is provided with means for holding the modular carpet. A carpet shear is positioned on a moveable frame which is adjustable to a predetermined distance above the moveable table. The moveable frame may be pivoted and raised above the moveable table such that the modular carpet on the table may be passed beneath and through the shear and thereafter the shear is raised to permit the moveable table to return to its original position.

6 Claims, 4 Drawing Sheets



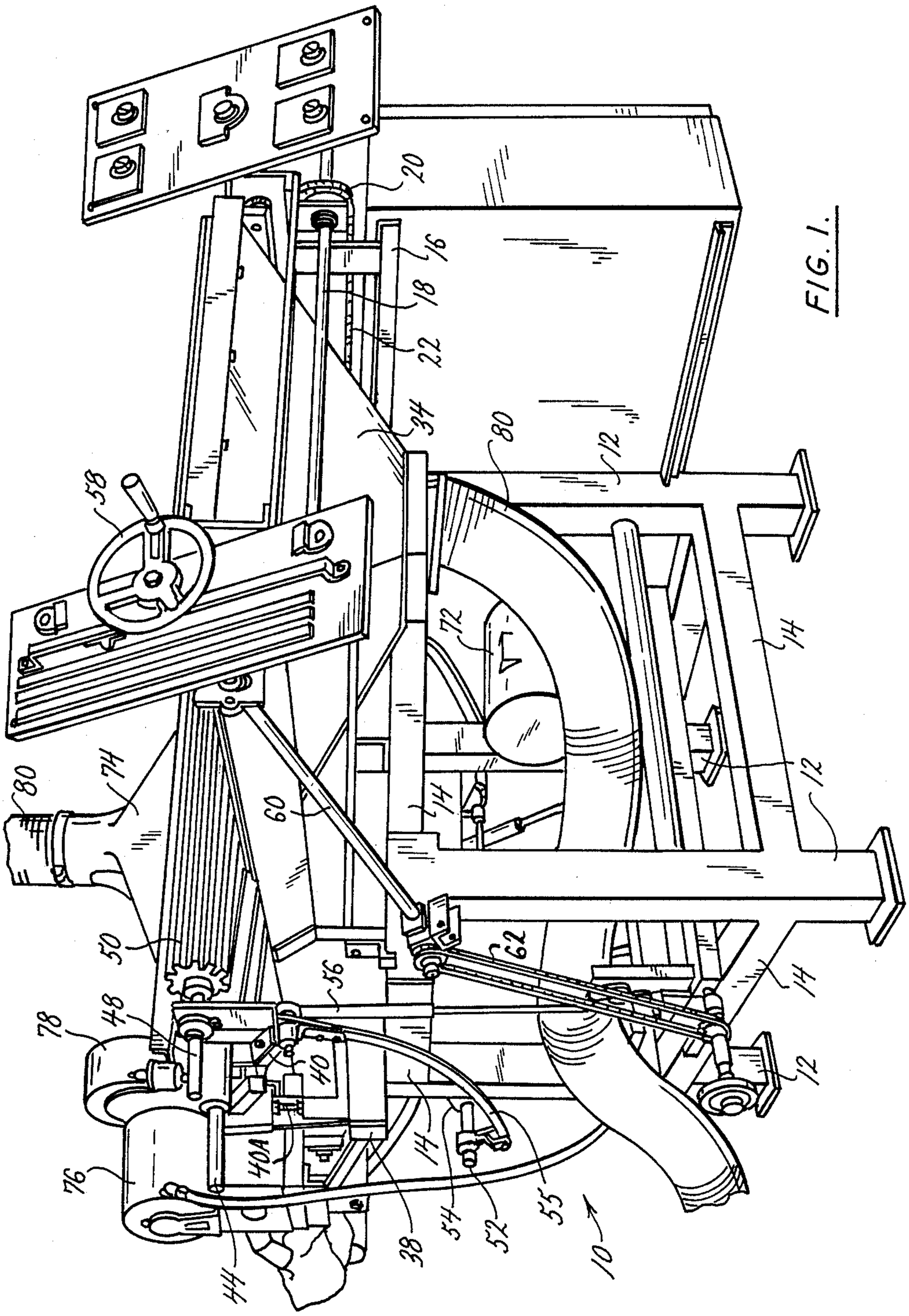

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FIG. 1.

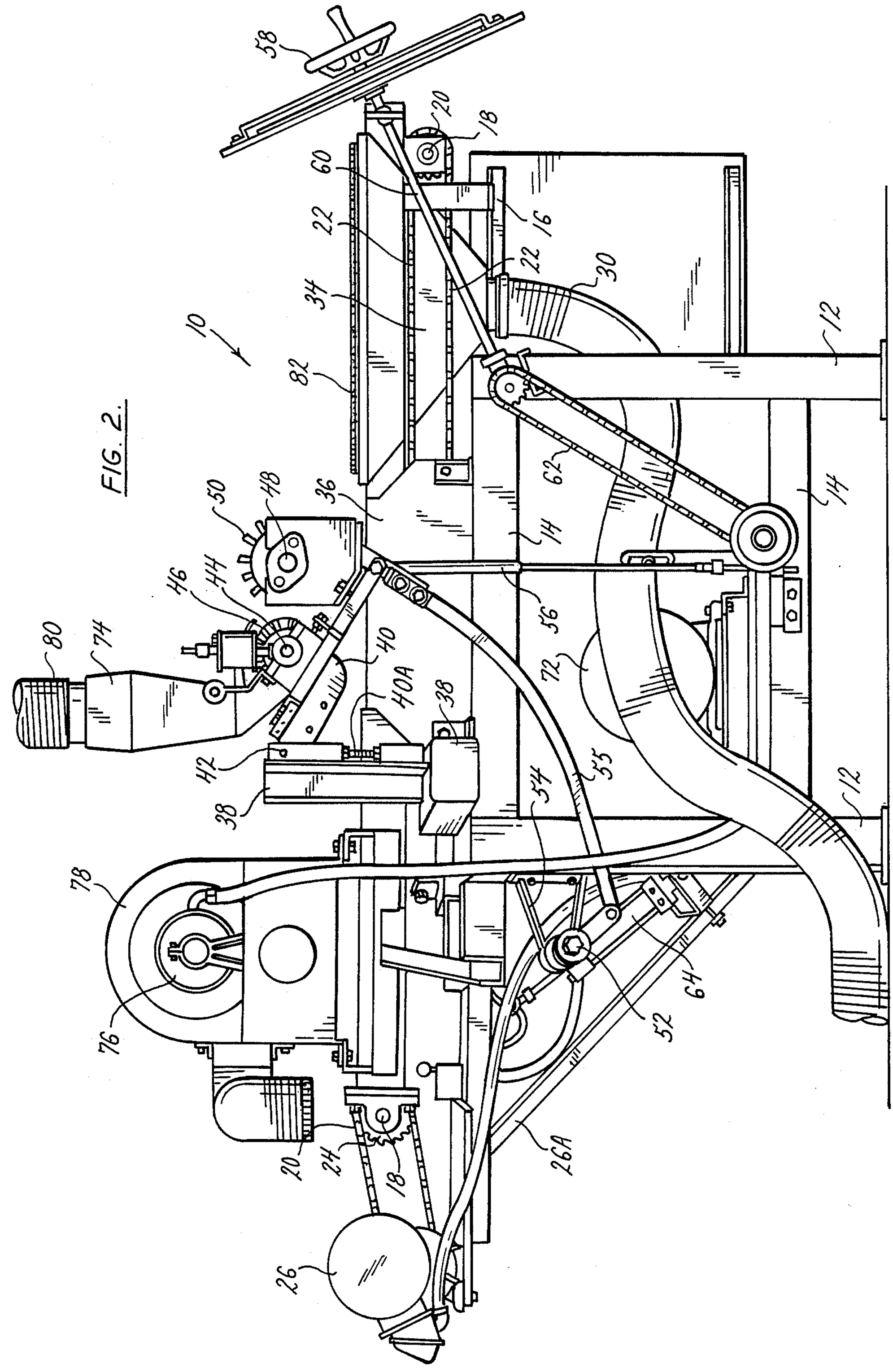
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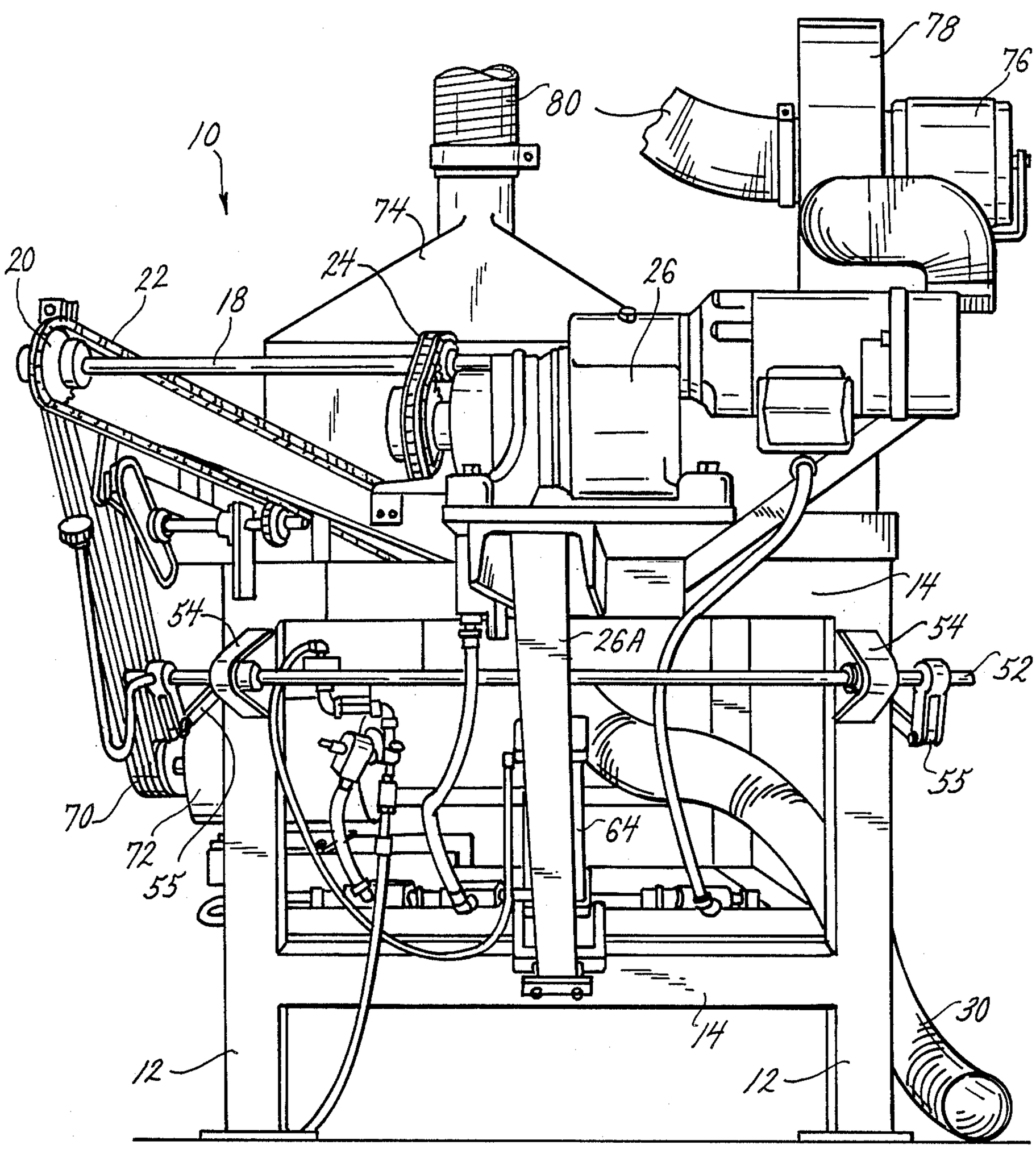
FIG. 2.

FIG. 3.



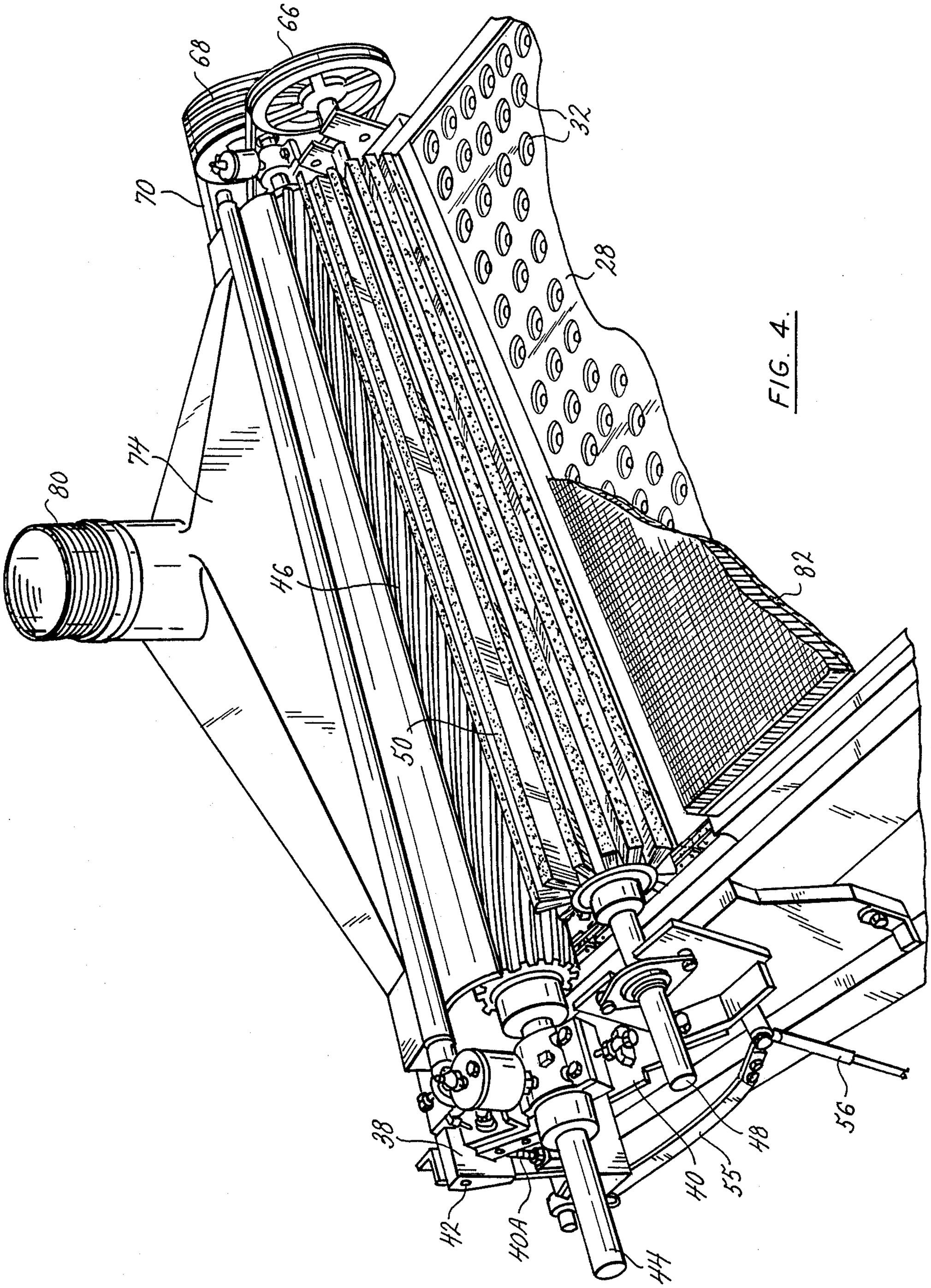


FIG. 4.

CARPET SHEARING APPARATUS

BACKGROUND OF THE INVENTION

The present invention relates to a carpet shearing machine for modular carpet. In the processing of pile carpet it is desirable to shear the pile to obtain a uniform height for the carpet.

Previously, carpet was produced and processed in rolls which were sheared by continuously passing the rolled carpet through the shears. The rolled material was passed through the shear in one direction and the equipment was not capable of handling small modular pieces of carpet such as 12×12 or 24×24 inch modules.

A method of processing modular carpet was to place the carpet material on a stationary table and to pass the shear over the carpet. This equipment did not adequately trim and clean the pile carpet. Additionally, the equipment was difficult to use and maintain.

SUMMARY OF THE INVENTION

Modular pile carpet, i.e. carpet which is not prepared and processed in rolls and is typically of 12 inch by 12 inch or 24 inch by 24 inch squares is becoming more popular. The present invention relates to a carpet shearing machine for shearing this modular pile carpet. The shearing machine of the present invention can accommodate various sizes of modular pile carpeting.

Additionally, the shearing machine of the present invention may be readily adjusted to permit the shearing of different height pile carpeting.

Further, the shearing machine of the present invention permits a single operator to process the modular carpeting and is easy to operate and maintain.

It is a specific object of the present invention to provide a carpet shearing machine which can accommodate various sizes of modular carpet and which will permit the carpet to be passed through the shear and thereafter the shear is raised to permit the carpet to return to its original position for removal from the machine. Various further and more specific purposes, features and advantages will be come apparent from the detailed description given below and taken in connection with the accompanying drawings which form part of this specification and illustrates by way of example, the preferred embodiment of the device of the present invention.

DESCRIPTION OF THE DRAWINGS

In the following description and in the claims, items will be identified by specific names for convenience, but such names are intended to be as generic in their application to similar items as the art will permit. Like reference characters denote like parts in the several figures of the drawings, in which:

FIG. **1** is a front view of the carpet shearing apparatus of the present invention;

FIG. **2** is a side view of the carpet shearing apparatus of FIG. **1**;

FIG. **3** is a rear view of the carpet shearing apparatus of FIG. **1**; and

FIG. **4** is a partial sectional view of the shear and brush mechanism of the apparatus of FIG. **1**.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings and in particular to FIGS. **1**, **2**, **3** and **4**, the apparatus of the present invention

consists of a frame member **10** having legs **12** with are provided with suitable cross-braces **14**. Attached to the cross-braces **14** at each end of the frame member **10** is a table guide arm **16**. Each pair of table guide arms **16** are provided with shafts **18** which contain sprockets **20** for accommodating a drive chain **22** on each side of the frame. The shaft **18** at one end of the frame member **10** has connected thereto a drive sprocket **24** which is connected to a suitable drive motor **26**. The motor **26** is connected to the frame **10** by suitable bracing and mounting **26A**. A table **28** having a surface **30** with plurality of openings **32** therein is positioned between the table guide arms **16**. The table **28** is connected on each side to the drive chain's **22** which serves to move the table from the front to the rear of the frame member **10**. A suction or vacuum device (not shown) is attached by the hose **30** to the underside of the table **28** through the duct **34** such that the suction or negative air pressure may be established through the openings **32** in the table **28**. The drive motor **26** is reversible such that the table **28** can be moved forward and backward by the drive chains **22**. A limit switch (not shown) is provided on the frame and is engagable by the table **28** as it moves from the front of the machine to the rear of the machine. This switch is connected to the motor **26** for reversing the motor when engaged.

Sheet metal sides **36** are connected by suitable means to the cross-braces **14** to protect an operator from the drive chains **22**. (Note that in FIG. **2** part of the sheet metal side **36** is not shown to provide a better view of the drive chains **22**.)

East side of the frame member **10** is provided with a pivotable arm mounting bracket **38**. A pivotable arm **40** is connected to the pivotable arms mounting bracket **38** by suitable means such as a pin **42**. The pivotable arm mounting bracket **38** is provided with an adjustment bolt **40A** for raising and lowering the position of the pin **42** on said bracket.

Mounted on the pivotable arm **40** by suitable means is a shaft **44** which contains the shear **46**. If desired a shaft **48** for a brush **50** for aligning the pile on the carpet may be connected to the pivotable arm **40** in front of the shear **46**. A shaft **52** is attached to the legs **12** by mounting brackets **54**. Each of the pivotable arms **40** are connected by means of linkage members **55** to the shaft **52**. Additionally, connected to the pivotable arm **40** at the linkage member **55** is an arm or stop **56**. The stop **56** may be raised or lowered by means of the adjustment wheel **58** which is connected through the shaft **60** and sprocket mechanism **62**. An air cylinder **64** is mounted on the frame **10** and is connected to the shaft **52** such that when the air cylinder **64** is in its normal position, the pivotable arms **40** are at the height established by the adjustment **40A** and stops **56** and the shear **46** and brushes **50** are positioned a predetermined distance above the table **28**. When the air cylinder **46** is activated the shaft **52** is turned which through the linkage members **55** causes the pivotable arms **40** to raise. The air cylinder **46** in activated by the table **28** engaging the limit switch as previously discussed.

The shaft **48** is provided with a drive pulley **66** and the shaft **44** is provided with a drive pulley **68**. The pulleys **66** and **68** are connected by means of belts **70** to the drive motor and pulley **72**. This arrangement of the belts **70** permits the shafts **44** and **48** to be raised and lowered by the pivotable arms **40** without interruption or affecting the rotation of the shears **46** and brush **50**.

A suction flume **74** is mounted on the pivotable arm **40** just above the nip area of the shear **46** with the carpet. A motor **76** and impeller **78** are connected by conduit **80** (partly shown) to the suction flume **74** for removing any fiber material removed from the carpet by the shear **46**.

In the operation of the equipment, the carpeting **82** to be sheared is placed on the table **28**. The suction device is activated which will cause the air pressure through the openings **32** in the table **28** to hold the carpeting **82** in place. The drive motor and pulley **72** is activated causing the brush **50** and shear **46** to be rotated. The table **28** is then moved by the drive chain **22** from its first or load position toward the shear **46**. As the carpet **82** passes beneath the shear **46**, the pile is sheared with the sheared pieces being removed through the suction flume **74**. After the table **28** has passed beneath the shear **46** it engages the limit switch at its second position. This limit switch serves to activate the air cylinder **64**, raising the pivotable arm **40** and reversing the drive motor **26** and drive chains **22** to return the table **28** to its original position. When the table **28** reaches its original position a second limit switch (not shown) is engaged which deactivates the air cylinder **64**, lowering the pivotable arm **40** to the stops **56**. The second limit switch also permits the drive motor **26** to again be reversed for subsequently moving the table **28**.

While the invention has been described and illustrated with respect to a certain preferred example, it will be understood by those skilled in the art after understanding the principle of the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention.

What is claimed is:

1. A machine for shearing modular pile carpet comprising a frame having a table thereon which is movable between a first position and a second position, means for holding modular carpet on said table, shear means on said frame positioned a predetermined distance above said table whereby the carpet is sheared as the table moves from the first position to the second position, and said shear means including means for raising said shear when said table is moved from the second position to the first position.

2. The machine of claim **1** wherein said table is provided within a plurality of openings, suction means attached to said table whereby suction air pressure through said openings holds the modular carpet on said table.

3. The machine of claim **1** wherein said shear means comprises a pivotable arm mounted on said frame, a shear mounted in said pivotable arm and an air cylinder connected to said pivotable arm whereby when said air cylinder is in its normal position said shear is in the position a predetermined distance above said table and when said air cylinder is activated the pivotable arm is moved upward to raise said shear.

4. The machine of claim **1** including adjustment means connected to said shear means for adjusting the predetermined distance between said shear and said table.

5. The machine of claim **3** including vacuum means connected to said pivotable arm above said shear for removing shaved pile material.

6. The machine of claim **3** wherein said table is provided with a plurality of openings, suction means attached to said table whereby suction air pressure through said openigns hold the modular carpet on said table.

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